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(71) Applicant: Daisey Kikai Co., Ltd.
Tsurugashima-shi, Saitama-Ken (JP)

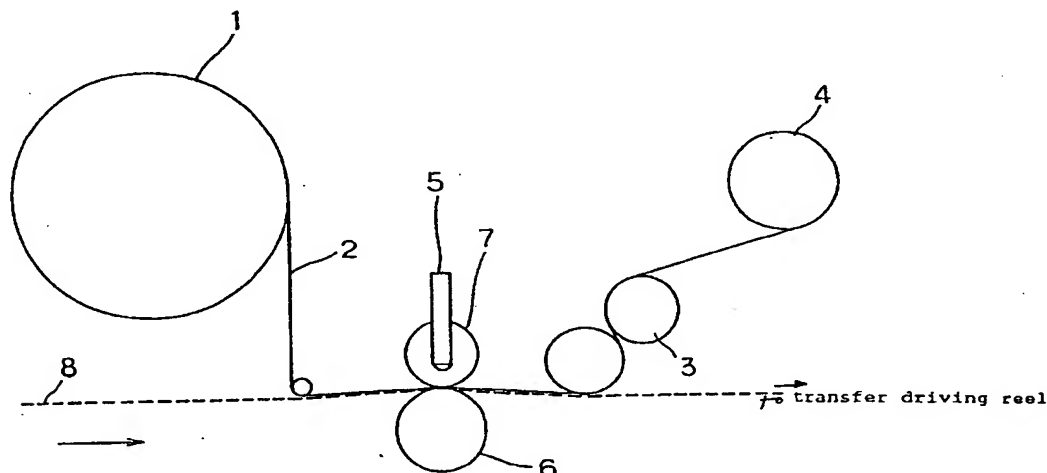
(72) Inventor: Sogabe, Masuo,
c/o Dausey Kikai Co., Ltd.
Tsurugashima-shi, Saitama Ken (JP)
(74) Representative: Hering, Hartmut, Dipl.-Ing.
Patentanwälte
Berendt, Leyh & Hering
Innere Wiener Strasse 20
D-81667 München (DE)

(54) Letter printing method for a packaging machine

(57) There is provided a simply applicable printing method for a letter printing on a film in a packaging machine which makes sealing as it changes transfer velocities of a letter printing object. A transfer velocity of a packaging film (8) is detected by a rotary encoder (7). A carbon tape (2) unwound from a carbon tape roll (1) and the packaging film (8) are placed between a head

supporting platen roller (6) and a line thermal head (5) and a necessary printing is made on the packaging film (8). An electric supply to the thermal head (5) is controlled synchronously with the transfer or moving velocity of the packaging film (8) detected by the rotary encoder (7).

Fig. 1



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Description

The present invention relates to a letter printing method for a packaging machine to make a letter printing on a moving printing object for packaging by supplying the electricity to a line thermal head.

In recent years, there are many cases of packages where a marking of different letters or marks for each letter printing object, such as a manufacturing date, a time period for taste, a manufacturing series number, etc. are required. In a packaging machine of the prior art, in case of making a letter printing on a packaging film, a letter printing required is made following a velocity of a film supplied from a packaging film roll.

An inexpensive line following type production administration printer of the prior art, is called as a hot printer device to make a letter printing by pressing a heated stamp or seal on to a thermal transfer ribbon or as a hot roll printer device to make a letter printing by pressing a surface of a heated engraved roll through which ink oozes out.

In these devices a stamp, or engraved roll is used, and thus it is required to change a letter printing portion each time of changing a printing content.

On the other hand, there exist a printer device which can easily change printing letters by a computer control using a thermal transfer ribbon which is used in a word processor or a printer device using a thermal transfer ribbon which is incorporated in a label vending machine.

However, these known letter printing methods using these printer devices are disadvantageous in that a transfer of a printing object, such as a film etc. is controlled by a printer service side. Thus such a method to make a letter printing on a film can hardly be incorporated in a packaging machine, which makes sealing as it changed transfer velocities of a printing object.

It is therefore an object of the present invention to overcome the above mentioned problems and to provide a line follow type letter printing method which is easily applicable as a letter printing method for a film in a packaging machine which makes sealing as it changes transfer velocities of a letter printing object.

A letter printing method according to the present invention is provided by which a letter printing is made by detecting a moving velocity of a moving letter printing object for packaging and a line thermal head being supplied with electricity synchronously with the detected velocity.

In order to detect a moving velocity of a letter printing object such as a film etc. according to the letter printing method according to the present invention, an appropriate moving velocity detecting means known per se in the prior art such as a rotary encoder etc. may be incorporated.

According to the letter printing method for a packaging machine according to the present invention, as mentioned above, a letter printing is controlled by detecting a moving velocity of a letter printing object and

a line thermal head being supplied with the electricity synchronously with the detected velocity resulting in that even a printing work which would require a lot of time and labour by the prior art method of changing printing portion, such as a dating function by an auto-calendar, a manufacturing series number printing etc. may be realized by simply making an input from an operation panel.

Brief Description of the Drawing:

Fig. 1 is an explanatory drawing showing a printing device for a packaging machine for carrying out a letter printing method according to the present invention.

Herebelow, a letter printing method according to the present invention is described more detailed under reference to Fig. 1 of the drawings. In Fig. 1 there is shown a preferred embodiment for carrying out a letter printing method according to the present invention. Numeral 1 designates a thermal transfer type carbon tape roll. A carbon tape 2 unwound therefrom is used for a letter printing and then, passing a constant measuring and transfer driving roller 3, is wound around a used carbon tape winding reel 4 for the used carbon tape.

The tape winding reel 4 for the used carbon tape is preferably of a constant torque driving type reel or with a function to wind a loosened tape by a dancer roll and a sensor.

Numeral 5 designates a line thermal head and numeral 6 designates a head supporting platen roller. Between the line thermal head 5 and the head supporting platen roller 6, the carbon tape 2 from the carbon tape roll 1 and a packaging film 8 to be letter-printed, both superimposed one upon another, are passed, and a previously programmed letter printing is applied to the upper surface of the packaging film 8. The moving or transfer direction of the packaging film 8 is shown by the arrow in Fig. 1.

Numeral 7 designates a rotary encoder, which detects a transfer or moving velocity of the packaging film 8. There are provided means so that the transfer velocity of the packaging film 8 detected by the rotary encoder 7 is applied to an appropriate control device (not shown) and that an electric supply to the line thermal head 5 is controlled to be caused synchronously with the transfer velocity detected.

The printing device shown in Fig. 1 has a construction as mentioned above. As the letter printing is controlled in accordance with the moving velocity of the packaging film 8 as a letter printing object which moving velocity is detected by the rotary encoder 7 and the line thermal head 5 is supplied with the electricity synchronously with the detected velocity, a printing on the packaging film 8 can be made easily by simply making an input from an operation panel.

According to the present invention as mentioned above, a moving velocity of a letter printing object is

detected and a line thermal head is supplied with the electricity synchronously with the detected velocity so that a printing on a letter printing object is obtained easily by simply inputting a manufacturing series number, etc. via an operation panel.

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According to the present invention there is provided a simply applicable printing method for a letter printing on a film in a packaging machine which makes sealing as it changes transfer velocities of a letter printing object. A transfer velocity of a packaging film 8 is detected by a rotary encoder 7. A carbon tape 2 unwound from a carbon tape roll 1 and the packaging film 8 are placed between a head supporting platen roller 6 and a line thermal head 5 and a necessary printing is made on the packaging film 8. An electric supply to the thermal head 5 is controlled synchronously with the transfer or moving velocity of the packaging film 8 detected by the rotary encoder 7.

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Claims

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1. A letter printing method for a packaging machine to provide a letter printing on a moving letter printing object for packaging, characterized in that a letter printing is made by detecting a moving velocity of said letter printing object (8) and by supplying a line thermal head (5) with the electricity synchronously with the detected velocity.

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2. A letter printing method as claimed in claim 1, characterized in that said moving velocity of said letter printing object (8) is detected by a rotary encoder (7).

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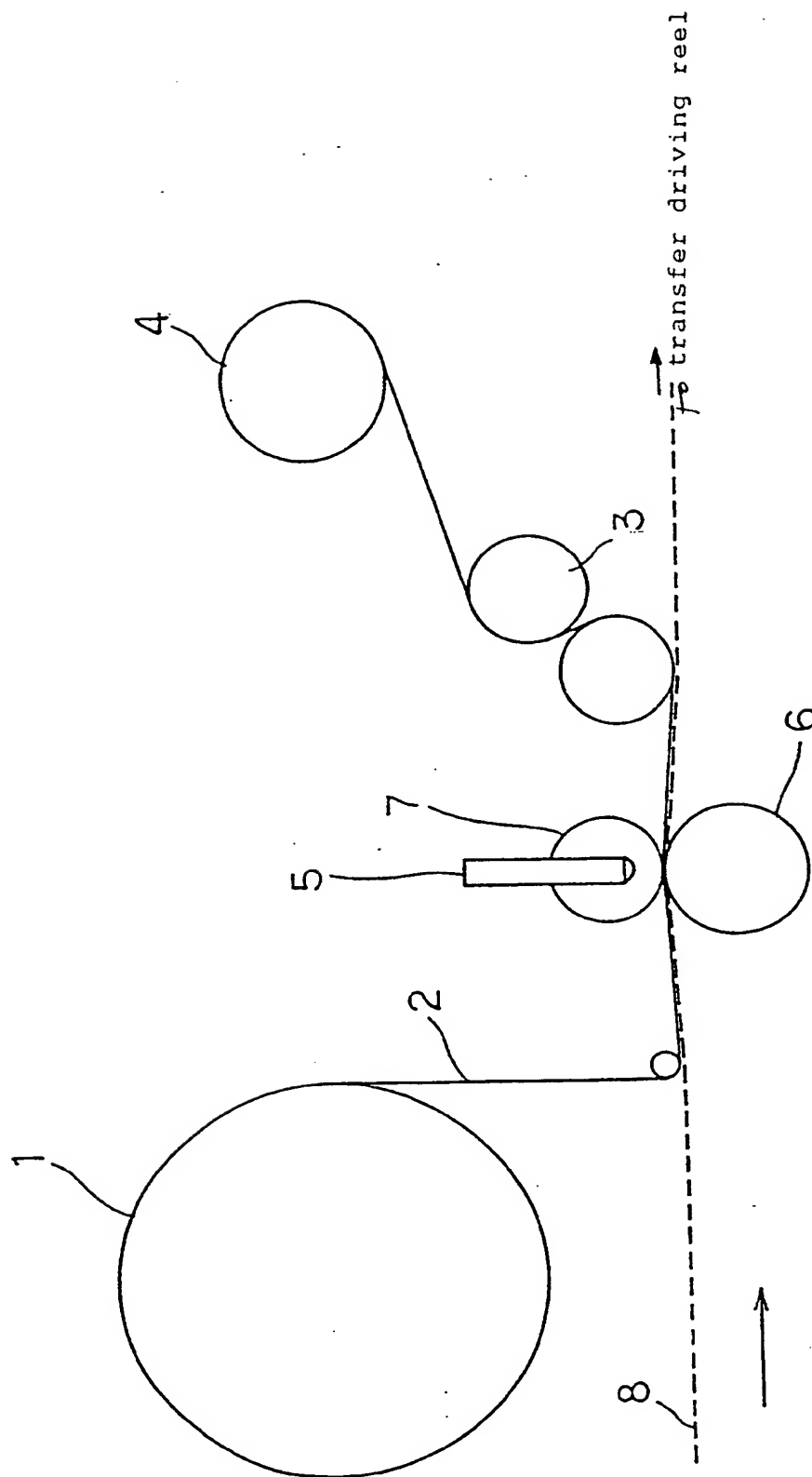
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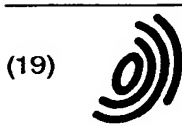
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Fig. 1





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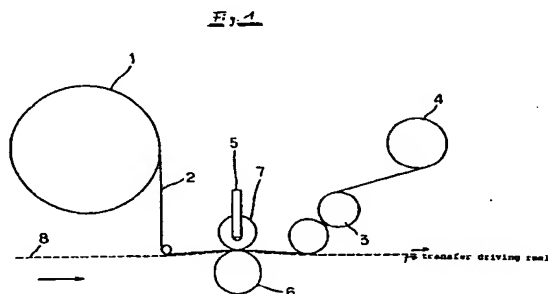
(71) Applicant: **Daisey Kikai Co., Ltd.**
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EUROPEAN SEARCH REPORT

Application Number
EP 96 10 2208

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. CL.6)
Y	PATENT ABSTRACTS OF JAPAN vol. 95, no. 3, 28 April 1995 & JP 06 344614 A (MAKII ENG KK), 20 December 1994, * abstract; figures 1-3 *	1,2	B41J2/35 B41J33/36 B41J3/00
Y	DE 37 43 698 A (SIEMENS AG) 6 July 1989 * the whole document *	1,2	
Y	EP 0 575 773 A (ESSELTE METO INT GMBH) 29 December 1993 * the whole document *	1,2	
Y	US 3 813 677 A (SHIMOTSUMA W) 28 May 1974 * the whole document *	1,2	
A	PATENT ABSTRACTS OF JAPAN vol. 018, no. 426 (P-1784), 9 August 1994 & JP 06 131062 A (FUJITSU LTD), 13 May 1994, * abstract *	1,2	
A	US 5 355 152 A (PORTER LORRAINE T ET AL) 11 October 1994 * the whole document *	1,2	
A	PATENT ABSTRACTS OF JAPAN vol. 009, no. 139 (M-387), 14 June 1985 & JP 60 018362 A (FUJI XEROX KK), 30 January 1985, * abstract; figures 2-4 *	1,2	
A	US 4 679 053 A (KATSURAI JUNJI ET AL) 7 July 1987 * abstract *	1,2	
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 28 January 1997	Examiner Nielsen, M
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			



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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
P,X	PATENT ABSTRACTS OF JAPAN vol. 95, no. 11, 26 December 1995 & JP 07 195724 A (CASIO COMPUT CO LTD), 1 August 1995, * abstract * -----	1,2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 28 January 1997	Examiner Nielsen, M
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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